



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2013-0909; Special Conditions No. 25-533-SC]

Special Conditions: Airbus Model A350-900 Airplane; Electronic System-Security

Protection from Unauthorized External Access

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued for Airbus Model A350-900 airplanes.

These airplanes will have a novel or unusual design feature associated with electronic system-security protection from unauthorized external access. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

EFFECTIVE DATE: [Insert date 30 days after date of publication in the Federal Register].

FOR FURTHER INFORMATION CONTACT: Varun Khanna, FAA, Airplane and Flightcrew Interface Branch, ANM-111, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington, 98057-3356; telephone (425) 227-1298; facsimile (425) 227-1320.

SUPPLEMENTARY INFORMATION:

Background

On August 25, 2008, Airbus applied for a type certificate for their new Model A350-900 airplane. Later, Airbus requested, and the FAA approved, an extension to the application for FAA type certification to November 15, 2009. The Model A350-900 airplane has a conventional layout with twin wing-mounted Rolls-Royce Trent XWB engines. It features a twin-aisle, 9-abreast, economy-class layout, and accommodates side-by-side placement of LD-3 containers in the cargo compartment. The basic Model A350-900 airplane configuration accommodates 315 passengers in a standard two-class arrangement. The design cruise speed is Mach 0.85 with a maximum take-off weight of 602,000 lbs.

Contemporary transport-category airplanes have both safety-related and non-safety-related electronic system networks for many operational functions. However, electronic system-network-security considerations and functions have played a relatively minor role in the certification of such systems because of the isolation, protection mechanisms, and limited connectivity between the different networks.

Type Certification Basis

Under Title 14, Code of Federal Regulations (14 CFR) 21.17, Airbus must show that the Model A350-900 airplane meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-129.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Model A350-900 series because of a novel or unusual design feature, special conditions are prescribed under § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, the special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Model A350-900 airplane must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36. The FAA must issue a finding of regulatory adequacy under § 611 of Public Law 92-574, the “Noise Control Act of 1972.”

The FAA issues special conditions, as defined in 14 CFR 11.19, under § 11.38, and they become part of the type-certification basis under § 21.17(a)(2).

Novel or Unusual Design Features

The Airbus Model A350-900 airplane will incorporate the following novel or unusual design feature:

The digital systems architecture for the Airbus Model A350-900 airplane is composed of several connected networks. This network architecture is used for a diverse set of functions, providing data connectivity between systems, including:

1. Airplane control, communication, display, monitoring and navigation systems,
2. Operator business and administrative support systems,
3. Passenger entertainment systems, and
4. Access by systems external to the airplane.

Discussion

The Airbus Model A350-900 airplane network architecture and configuration may allow increased connectivity to, and access from, external network sources, and operator operations and maintenance networks to the airplane control domain and operator-information-services domain. The airplane-control domain and operator-information-services domain perform functions required for the safe operation and maintenance of the airplane. Previously, these domains had very limited connectivity with external network sources. The network architecture and configuration may allow the exploitation of network-security vulnerabilities resulting in intentional or unintentional destruction, disruption, degradation, or exploitation of data, systems, and networks critical to the safety and maintenance of the airplane.

The existing regulations and guidance material did not anticipate these types of airplane system architectures. Furthermore, 14 CFR regulations and current system-safety assessment policy and techniques do not address potential security vulnerabilities, which could be exploited by unauthorized access to airplane networks, data buses, and servers. Therefore, these special conditions are to ensure that unauthorized wired or wireless electronic connections do not compromise the security (i.e., confidentiality, integrity, and availability) of airplane systems.

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Discussion of Comments

Notice of proposed special conditions No. 25-13-17-SC for the Airbus Model A350-900 airplane was published in the Federal Register on December 17, 2013 (78 FR 76251)

Comment from Airbus

Airbus had one comment about the following wording of the first paragraph of the Proposed Special Conditions:

The applicant must ensure airplane electronic system security protection from access to or by unauthorized sources external to the airplane, including those possibly caused by maintenance activity.

Airbus considers that the wording “to or by” is incorrect. The protection must prevent access from unauthorized sources external to the airplane only. The requirement of protection to unauthorized sources external to the airplane, is not relevant.

Therefore, Airbus suggests that the wording be modified as follows :

The applicant must ensure airplane electronic system security protection from access by unauthorized sources external to the airplane, including those possibly caused by maintenance activity.

FAA Response

The FAA agrees with Airbus and has changed the special conditions accordingly.

Applicability

As discussed above, these special conditions apply to Airbus Model A350-900 series airplanes. Should Airbus apply later for a change to the type certificate to include another model incorporating the same novel or unusual design feature, the special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on the Airbus Model A350-900 series airplanes. It is not a rule of general applicability.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type-certification basis for Airbus Model A350-900 series airplanes.

1. The applicant must ensure airplane electronic system-security protection from access by unauthorized sources external to the airplane, including those possibly caused by maintenance activity.
2. The applicant must ensure that electronic system-security threats are identified and assessed, and that effective electronic system-security protection strategies are implemented to protect the airplane from all adverse impacts on safety, functionality, and continued airworthiness.

3. The applicant must establish appropriate procedures to allow the operator to ensure that continued airworthiness of the airplane is maintained, including all post-type-certification modifications that may have an impact on the approved electronic system-security safeguards.

Issued in Renton, Washington, on August 15, 2014.

Jeffrey E. Duven
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Aircraft Certification Service

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